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Final Environmental Impact Statement

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WESTERN ENERGY COMPANY ROSEBUD MINE Area D

Type of Statement: Final Environmental Impact Statement

Lead Agencies:

State of Montana, Department of State Lands
U.S. Department of the Interior, Office of Surface Mining, Reclamation
and Enforcement

Proposed Action:

Approval to mine 3,073 more acres (known as Area D) of Western Energy
Company's Rosebud Mine.

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Final

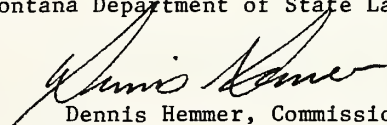
ENVIRONMENTAL IMPACT STATEMENT

WESTERN ENERGY COMPANY'S
ROSEBUD MINE
AREA D

July 1985



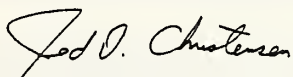
Montana Department of State Lands



Dennis Hemmer, Commissioner



U.S. Office of Surface Mining



Jed D. Christensen, Acting Director

OSM-EIS-10

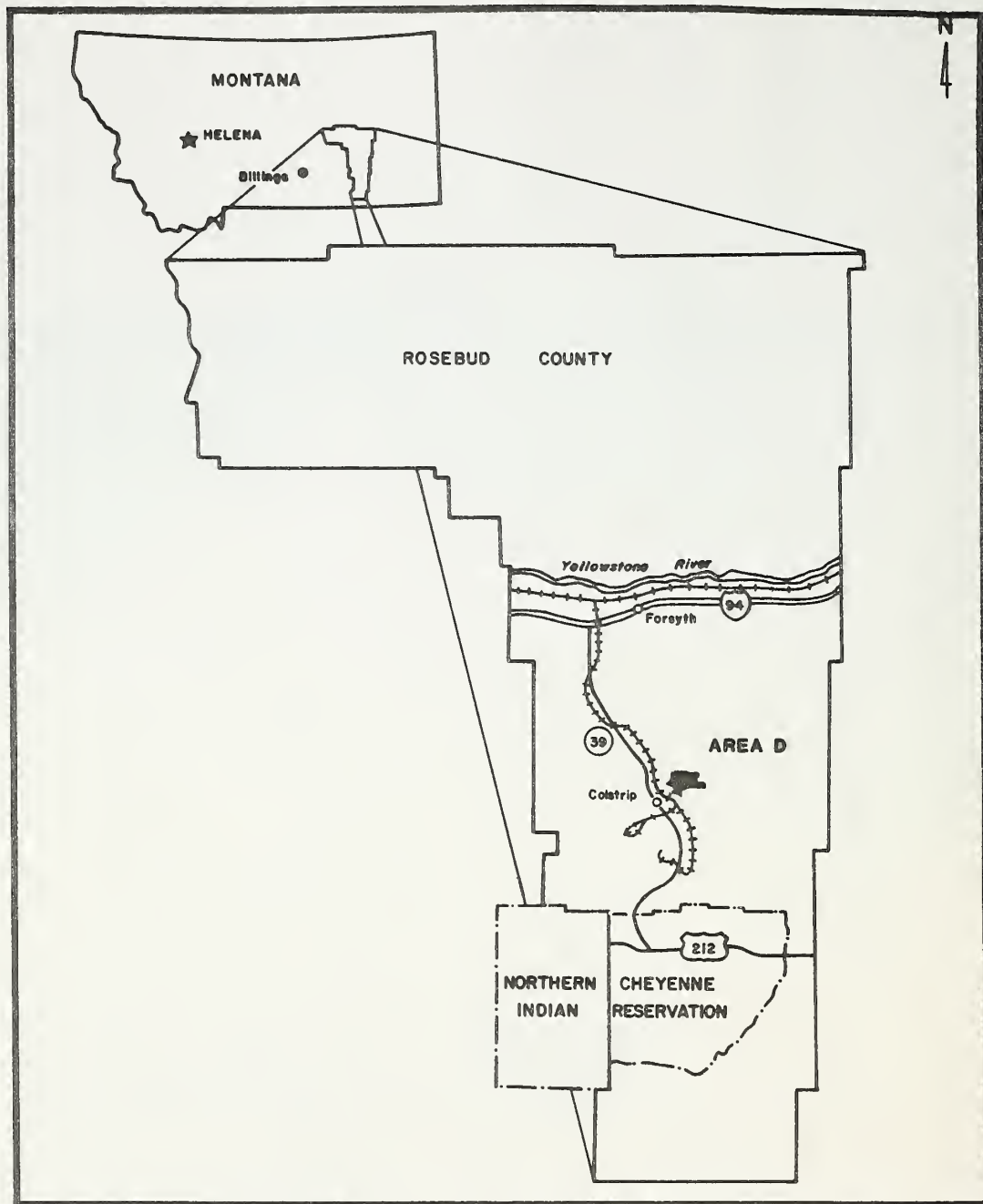


FIGURE S-1

Area D lies just northeast of Colstrip and 35 miles from Forsyth, the Rosebud County seat. The largest city nearby is Billings, 120 miles away.

ROSEBUD MINE

AREA D

In January, 1985, the Montana Department of State Lands and the U.S. Department of the Interior issued a draft environmental impact statement on Western Energy Company's Rosebud Mine Area D. Letters of public comment were received on the draft document through March 19, 1985. This final EIS includes the agency's responses to the public's comments and revisions to the draft EIS. For a complete review of the agency's evaluation of Western Energy Company's proposal the reader is referred to the draft EIS.

Action under Consideration

Western Energy Company has submitted an application to mine an additional 3,073 acres, known as Area D, at the Rosebud Mine (fig. S-1). The commissioner of the Montana Department of State Lands and the Secretary of the Department of the Interior are required to make a decision on whether to issue the necessary approvals for mining. Before the agencies are the following alternatives: (1) Approve the application as proposed (see chapter I and II), (2) reject the application (see chapter IV), (3) selectively reject the application (see chapter IV), or (4) approve mining with special conditions (see introduction and chapter III).

The Company's Proposal

Western Energy proposes to mine an additional 68.5 million tons of coal in the application area. Mining would take place over 18 years at an average rate of 3.8 million tons per year. If the application is approved, the company could begin operations in the new area in 1985.

Along with the application, the company has submitted future plans for an eastward and westward extension of Area D, known as the life-of-mine expansion. The expansion is not a part of Western Energy Company's application for approval to mine. The life-of-mine plan, however, is analyzed to display the cumulative impacts of mining. In the future plans, the company would mine an additional 19.3 million tons of coal from 1,309 acres. The expanded mine would close at the end of 23 years. Before mining could commence in the expansion area (D-east) Western Energy company would first have to submit an application for approval to the Montana Department of State Lands and U.S. Department of the Interior, Office of Surface Mining.

Preferred Alternative

The agencies' preferred alternative is approval of mining with special conditions. The special conditions are listed in the introduction.

Summary of Impacts

Geology: Impacts on geology would not be significant. The postmining topography would approximate the existing topography, but would be gentler, with lower hilltops and broader drainage bottoms. With successful revegetation of the disturbed area, erosion rates would be similar to, or less than, premining rates. Minor ephemeral tributaries not restored during reclamation may redevelop as gullies. This would not affect postmining land use and would not release a significant amount of sediment downstream.

Overburden physical and chemical characteristics are not expected to adversely affect postmining revegetation success.

Hydrology: Mining in the application area would dewater the Rosebud coal aquifer by intercepting ground water now discharging to the upper Cow Creek watershed. Dewatering could reduce alluvial aquifer flow by 1.5 to 3.0 percent. Mining would also remove five wells and three seeps in the application area and possibly reduce flows and water quality in three nearby springs, two beside the application area and one beside the life-of-mine expansion. After mining, Western Energy would drill three sub-McKay wells to replace the wells and one of the potentially affected adjacent springs.

A spoil aquifer would develop with an anticipated total dissolved solids (TDS) concentration two to three times the concentrations now in the Rosebud coal and overburden. Spoil water would discharge to upper Cow and Pony creeks. Reclamation of unreclaimed Northern Pacific spoil next to Area D would decrease the total volume of spoil water discharging to Cow Creek. The result of increased TDS concentrations and decreased volume would be an increase in TDS concentrations in Cow Creek alluvial water by 1 to 2 percent from mining in the application area and 2 to 3 percent from mining in the life-of-mine expansion. Impacts overall would not be significant.

Soils: Some impacts to the soil resource would occur during soil salvage, storage, and replacement. These include reduction of soil porosity, alteration of soil structure, and dilution of organic matter levels in the near-surface horizon. Microbial activity would be reduced, at least temporarily, in the reconstructed mine soil. Increased rates of soil loss by wind and water erosion can be expected prior to the reestablishment of vegetation. Overall, impacts to soils would not be significant.

Vegetation: During reclamation, Western Energy would replace the major premining vegetation types. The only exception would be the 120 acres of cropland, which would be converted to rangeland. Conversion of cropland and other areas (e.g., mine spoil, disturbed grassland, ponds, and ranchyard) to rangeland would increase grazing capacity.

Mining and reclamation would decrease species diversity and create a less complex mosaic of vegetation for several decades after mining. Ponderosa pine (*Pinus ponderosa*) stands with diverse canopy and tree size characteristics would also be lost for several decades, or longer. If reestablishment of ponderosa pine is unsuccessful, the loss would be a significant impact, since 49 percent of the ponderosa pine vegetation type of the Rosebud Mine occurs on the Area D application area and life-of-mine expansion. Otherwise, impacts would not be significant.

Wildlife: Major direct impacts to most wildlife would be temporary and limited to the area of disturbance. Wildlife species dependent upon ponderosa pine, shrub, and grassland habitats would lose nests, forage, and shelter until these habitats could be reestablished. Also lost until successful reclamation would be habitat for pronghorn, predators, turkeys, songbirds, raptors, and sharptail grouse.

Climate: Mining in Area D would not affect the climate. Particulate emissions would remain at or near ground level, and total emissions would be too small to affect either precipitation or radiation balance.

Air Quality: Total suspended particulate concentrations in the Colstrip area would change little due to mining in either the Area D application area or life-of-mine expansion.

Employment and Income: The jobs provided by mining over the life of Area D would replace those phased out in Area E. No new jobs would be created.

Social Conditions: Since Area D would not create new jobs, it would not increase the population of Rosebud County, Colstrip, or Forsyth. The population of Rosebud County, Colstrip, and Forsyth peaked in 1982 and 1983. It is projected to decline through 1986 and remain relatively stable thereafter. The population attributable to Area D would account for approximately 30 percent of all direct coal-related population in Rosebud County. Area D employment would contribute to the stability of Colstrip's social life, especially during the period of population decline after the completion of Colstrip Generating Units 3 and 4.

Social and Community Services: The strain placed on Colstrip's and Rosebud County's social and governmental services in the past is over. Service expansions and improvements coupled with a declining construction population have combined to create a service system sufficient for the area's needs. Each community service has idle capacity and could absorb additional clients. The population related to Area D already resides in the area and does not constitute a new population to be served.

Fiscal Conditions: Mining would generate \$304.6 million in tax revenues for local school districts and county, state, and federal governments over the life of Area D.

Land Use: Mining of the Area D application area and life-of-mine expansion would temporarily suspend grazing on a maximum of 2,110 acres of rangeland and eliminate wheat and hay production on approximately 120 acres. This impact would be minor.

Transportation: Area D would not noticeably change either train or highway traffic levels in Rosebud County.

Recreation: Since Area D would not increase population, no impact on recreation facilities or sites in or near Colstrip is expected.

Cultural Resources: One prehistoric site eligible for listing on the National Register of Historic Places may be disturbed by vandalism and theft during mining in the application area. Six additional sites would be destroyed by mining in the life-of-mine expansion.

Aesthetics: Western Energy's operations would initially destroy the landscape of the mine area. After mining, reclamation would blend the minesite with surrounding lands. In the long term, as ponderosa pine woodlands regrow, aesthetic impacts would not be significant.

The Montana Department of State Lands and the U.S. Department of the Interior, Office of Surface Mining, published a draft Environmental Impact Statement (DEIS) in January, 1985 for Western Energy Company's proposed Area D of the Rosebud Mine.

The public comment period ended on March 14, 1985; however, the agencies extended the deadline to March 19, 1985. The agencies reviewed a total of sixteen letters commenting on the draft EIS. These letters required minor corrections in the agencies draft and did not offer additional information or data that would have altered the conclusions of the draft EIS.

The agencies, as a result, have prepared an "abbreviated" final EIS. The final EIS identifies the agencies' preferred alternative and makes corrections or provides new information brought to our attention by commentors on the draft. Portions of the draft EIS are reproduced only where corrections and new information were made in the text. Changes are either underlined or lined-out within a paragraph. In cases where entire paragraphs are changed, the unchanged paragraphs before and after the changed paragraph are reprinted. In all cases, chapters, and pages from the draft EIS are identified so that the reader can refer to the draft EIS for the place of change.

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3. Selective Rejecting Approval

DSL or DOI can reject approval for mining specified areas. The specified areas would include, for example, those having special, exceptional, critical, or unique characteristics, or where mining would affect the use, enjoyment, or fundamental character or neighboring land having the above special characteristics (82-4-227 MCA). The specified areas could also include those that could not meet state and federal reclamation standards.

DSL and OSM have not ~~at this time~~ identified any lands for selective rejection. ~~but that does not preclude such action following review of this EIS. The public is invited to comment on this alternative and if such areas are identified, they will be analyzed in the final EIS.~~ In addition, no such areas were specified by the public during the comment period. Therefore, this alternative is not analyzed further.

4. Approve Mining with Special Conditions (Preferred Alternative)

If parts of the proposed plan were considered unacceptable, DSL and DOI could approve mining with special conditions. Modifications identified in this EIS that would reduce the impacts of the mine are listed as separate sections at the end of each subject in chapter III. These sections are titled "Mitigating Measures." The agencies have selected only one special condition for the preferred alternative. The condition would require the company to--

Monitor flows from Spring No. 24 that provides water to a stock pond located downstream of the spring. If the flows decrease significantly, Western Energy would be required to provide an alternate source of stock water.

The agencies chose not to select the remaining mitigating measures identified in the draft EIS for one or more of the following reasons:

- 1) the measures were already a part of the company's plan or were included in the plan by the company after release of the draft EIS. Examples include fencing of shrubs, retaining sediment ponds for wildlife water sources, and establishing raptor perches.
- 2) the measure would not provide any significant benefit toward reducing the impact.
- 3) the company would have to implement the measure to meet reclamation bond release requirements thus, it would be redundant to require it as a special condition. An example would be to plant additional trees and shrubs after the first planting to compensate for mortality.

5. No Action

The no-action alternative was evaluated by OSM and determined not to be reasonable because the company has fulfilled the requirements of its federal lease and has filed a complete permit application with OSM. Therefore, a decision by the Secretary of the Interior regarding approval of the mining plan and issuance of a federal permit to mine coal is required by law. However, for OSM, the impacts to the human environment of implementing the no-action alternative would be the same as those of rejecting the application. Thus, for the purpose of this EIS, these alternatives are considered equivalent and the no-action alternative is not analyzed further.

COMPARISON OF ALTERNATIVES CONSIDERED

DSL and DOI are now considering three alternatives: approve the application as submitted, reject the application, or approve the application with special conditions. Approving The application as submitted would have many impacts, but most would be minor. Among the impacts:

- o The replacement of five wells and three seeps destroyed by mining with three wells.
 - o A 5-percent increase in total dissolved solids concentrations in the alluvial water of the upper reaches of Cow Creek.
 - o The unavoidable short-term impacts on soils, including a reduction in soil porosity, a breakdown of structure, a dilution of organic matter, and a reduction in microbial activity.
- IN-7
- o The elimination of 120 acres of cropland.
 - o The potential loss at least in the short term, of ponderosa pine forests, plant diversity, and the complex mosaic of vegetation types.
 - o The temporary loss of 3,465 acres of wildlife habitat.
 - o The destruction of six cultural resource sites.

The preferred alternative, approval of the proposal with special conditions would have many of these same impacts. ~~However, to the extent that special conditions are imposed, the impacts would be reduced.~~ The special condition that would require the company to monitor spring 24 would ensure the installation of an alternate source of water should the spring cease flowing as a result of mining.

Application rejection would eliminate many of the detrimental impacts of application approval. But the rejection would create other adverse effects:

Page

- o The loss of up to 130 jobs.
- o A decline in the population of Colstrip and Rosebud County as a result of the job loss.
- o The loss of \$304.6 million in tax revenues that would otherwise go to county, state, and federal governments.

Chapter I

WESTERN ENERGY COMPANY'S PROPOSAL

No changes.

DESCRIPTION OF THE
EXISTING ENVIRONMENTPage
II-5

Valley Fill Materials

Valley fill materials include unconsolidated colluvial and alluvial deposits of clay, silt, sand, and gravel. The small ephemeral drainages in Area D contain little valley fill. Larger deposits of alluvium lie downstream of Area D, along Spring Creek, Cow Creek, Pony Creek, and East Fork Armells Creek. Within Area D, valley fill may become saturated only briefly during spring snowmelt or following heavy runoff. Limited areas of saturated valley fill may occur where overburden or coal springs and seeps discharge within drainages.

II-10

Groundwater Quality

Water quality in valley fill (alluvial) aquifers in the Rosebud Mine also varies. Alluvial water in the upper reaches of Cow Creek normally has TDS concentrations in the range of 4,500 mg/l. Similar concentrations occur in the headwaters of Stocker Creek and West Fork Armells Creek. This is higher than for similar headwater drainages in the Colstrip area and may reflect degradation in water quality by old Northern Pacific spoil near Areas D and E. Downstream in Cow Creek, TDS concentrations decrease to about 2,700 mg/l, probably as a result of discharge from the sub-McKay aquifer.

II-11

Surface Water

Limited No water quality data ~~are available~~ for ephemeral drainages within Area D. ~~Data for the Colstrip area~~ indicate that the water quality of runoff in ephemeral drainages is generally of a calcium-bicarbonate type and TDS concentrations are generally less than ~~4,000~~ 200 mg/l ~~and often less than 100 mg/l (Western Energy Company [WECO] 1983, p. 11).~~ (Western Energy Company [WECO] 1985). Data for East Fork Armells Creek, which flows most of the year, shows TDS concentrations for most of the year are greater than 2,000 mg/l and often in the 3,000- to 4,500-mg/l range. Data available for lower Cow Creek are similar, although concentrations are higher during late summer. These high TDS concentrations result from contributions from alluvial water and the concentrating effects of evapotranspiration.

II-29

Upland Game Birds

One sharp-tailed grouse dancing ground (No. 11) is located in the northwest east quarter of section 30 in the eastern part of the Area D life-of-mine expansion. An additional dancing ground (No. 15) is located just outside the life-of-mine boundary in the southeast quarter of section 29. Attendance at lek 11 ranged from 2 to 15 male

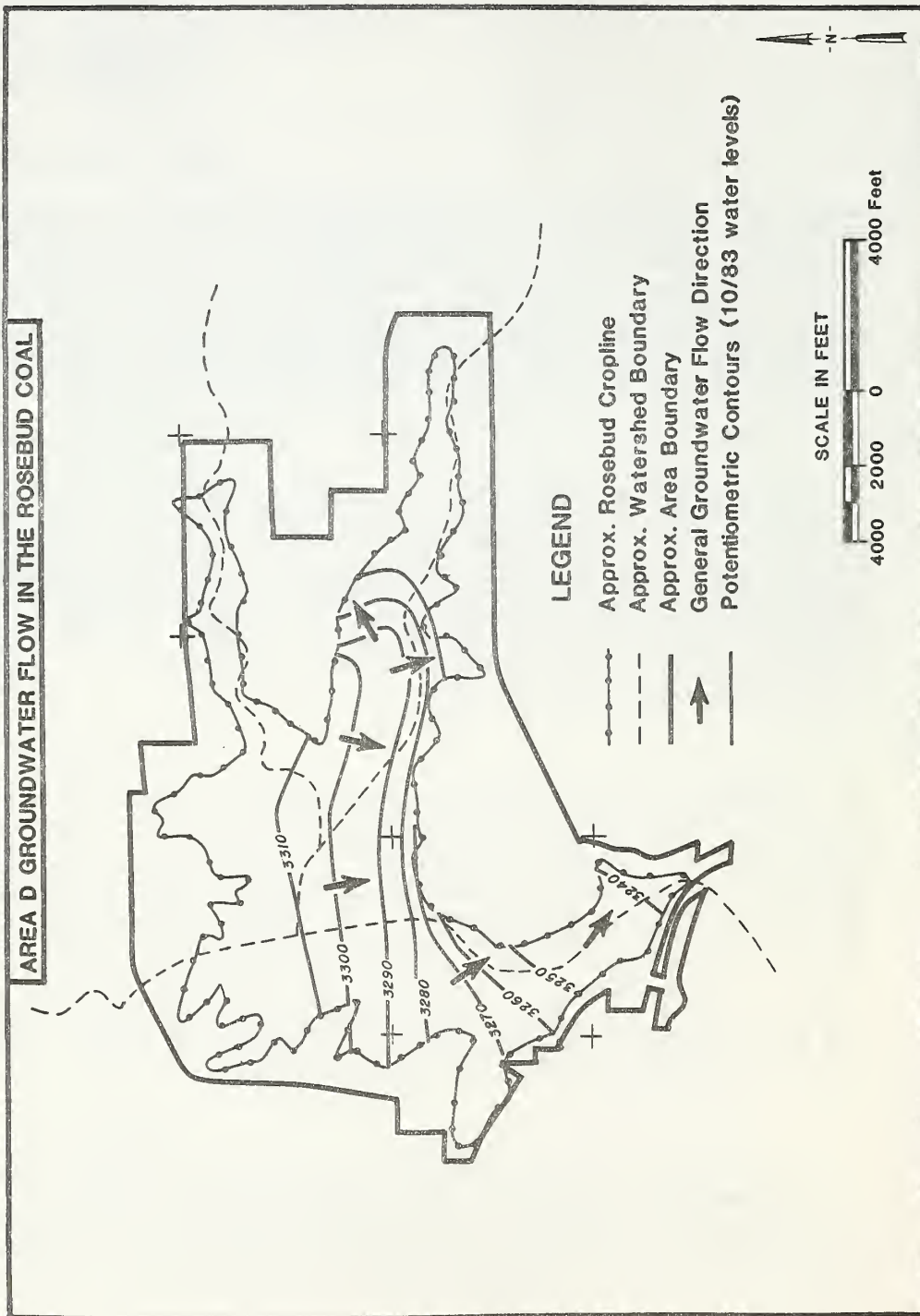


FIGURE II-4 (revised page II-9)

Ground water in the Rosebud coal of Area D generally flows southeast, following the 3 percent dip of the coal bed. At the northern edge of Area D, the coal bed is dry.

Page

II-29 grouse from 1973 to 1981, averaging 10.7 during those 9 years. Attendance at lek 15 ranged from 7 to 15 male grouse from 1974 to 1981, averaging 10.4 for those eight years.

II-30

Raptors

Eleven species of raptors have been observed on the Area D study area since 1974. The application area and life-of-mine expansion did not provide many observations. Four species have been observed: red-tailed hawk, northern harrier, rough-legged hawk, and Cooper's hawk. In 1980, 1981, and 1984, great horned owls nested in Eagle Rock, less than one-half mile north of the application area in section 14. Prairie-falcons nested in this site in 1979. There are no known nesting raptors on either the Area D application area or life-of-mine expansion.

II-42

Solid Waste

Solid waste collection and disposal services are now provided by a rural refuse disposal district. The district contracts for refuse collection services with a waste disposal company headquartered in Miles City. Refuse collection is made by a truck with a 25-cubic-yard compactor. Solid wastes are buried in old strip-mine cuts sealed with clay northeast of the Colstrip townsite. Old mine spoil is graded over the solid wastes. The present dump site serves Rosebud and Treasure counties and the Northern Cheyenne Reservation. Solid waste collection capacity is adequate at present, with one collection day per week. ~~The Montana Power Company's Environmental Department monitors~~ Monitoring four wells beside the landfill site for ground water contamination. ~~There have been~~ has shown no problems to date (Lawrence Miller, Engineer, Sunlight Development Company; Julie Etchemendy, co-owner, Colstrip Disposal Service, pers. comm., July 3, 1984).

Chapter III

IMPACTS OF WESTERN ENERGY'S PROPOSAL

Page
III-4 Overburden

At one sampling location, the overburden profile exhibited elevated salinity and boron levels. High salinity could cause moisture stress for growing plants. High boron could cause plant toxicity. ~~Another nearby sampling location exhibited zones high in molybdenum. Plants grown in materials high in molybdenum can have high molybdenum concentrations compared to copper, rendering the plants toxic to livestock.~~

III-5 In the vicinity of these sample locations, monitoring of regraded spoil and selective handling of materials, including possibly the importation of higher quality spoil from other areas ~~may be necessary to avoid potential problems. These measures have~~ has been proposed by Western Energy, ~~although the company has specifically identified only one of the sample locations of concern.~~

The overburden sampling intensity in the life-of-mine expansion is lower than in the application area. However, a recent analysis by the agencies indicates that the overburden has been adequately characterized. ~~Additional sampling would significantly increase the reliability of overburden information in the expansion.~~ Proposed routine monitoring of regraded spoil, which would be conducted prior to topsoil replacement, would minimize the any potential for harmful effects.

Geologic Hazards

Explosive discharges used to fracture overburden and coal would be monitored and would not exceed 1 inch per second maximum potential velocity at the nearest dwelling two miles away. As such, mining and blasting would probably not structurally damage buildings or trigger earthquakes.

Geologic Resources

Sixty-nine million tons of coal in the Rosebud coal seam are estimated to be within the bounds of the application area. The life-of-mine expansion contains an additional 19 million tons of recoverable coal. Western Energy estimates that 94 percent of the coal would be recovered. It is extremely unlikely that the underlying McKay coal seam would ever be mined once the overlying Rosebud is removed. Additional coal seams lie farther below the surface, but are not economically mineable.

~~Overburden sampling intensity in the life of mine expansion does not adequately characterize the overburden quality. Additional sampling would significantly increase the reliability of overburden information used to identify potential revegetation problems. To assure that postmining revegetation would not be adversely affected, additional overburden samples from the life of mine expansion should be collected and analyzed.~~

Mining would remove the Rosebud coal aquifer in Area D and would disrupt overlying water-bearing zones in the overburden. Initially, ground water from adjacent, as yet undisturbed, strata would flow into the mine pit. Dewatering effects would be limited to the mine area and the immediate vicinity because the Rosebud coal and overburden are topographically isolated.

~~The first cut (boxcut) for the proposed mining operation would be located along the southern boundary of the mine area, on the down-dip edge of the strata to be disturbed by mining. (The coal beds tilt slightly to the south toward Cow Creek.) Mine pit inflows would increase as the boxcut is extended. Maximum inflows would occur when the advancing mine pit first intersects the maximum width of an affected aquifer. In the application area, maximum inflows to the boxcut from the adjacent Rosebud coal aquifer are projected to be approximately 80 gallons per minute (gpm). Within a year after mining starts, mine inflows would drop to 35 gpm. Most of all of this inflow would be lost to evaporation.~~

~~Inflows from the adjacent old Northern Pacific spoil and spoil pond are more difficult to predict because of the uncertainty in aquifer characteristics and pond depths, and the limited lateral extent of the spoil aquifer. If the company leaves a strip of undisturbed Rosebud coal between the old spoil area and the mine pit, maximum inflows would be less than a few hundred gallons per minute. Should the mine pit instead intersect the spoil area, significantly greater inflows may occur so the spoil aquifer and spoil pond dewater into the mine pit. In either case, pit inflows would decrease rapidly as the pond and spoil aquifer are dewatered.~~

~~As mining continues, succeeding mine cuts would be located up-dip of the boxcut and would affect the same strata dewatered by the initial cut. The spoil aquifer would eventually stop contributing inflow to the pit. This would happen when the aquifer is totally dewatered or as succeeding cuts move up-dip away from the old spoil area. Inflow rates from the Rosebud coal would drop to less than 5 gpm as ground-water storage in the aquifer is depleted.~~

Mining would begin along the old Northern Pacific highwall in the southern part of Area D. The abandoned pit adjacent to the highwall contains water which is a combination of ground water inflow from the Rosebud coal on the north and west, spoils on the south and east, and surface runoff from the general area. Before beginning to mine, Western Energy would dewater the pit by pumping the water to sediment ponds. During dewatering, maximum inflows to the pit from the Rosebud coal would be about 80 gallons per minute (gpm). Within a year, inflow from the coal would drop to less than 35 gpm, most of which would be lost to evaporation.

No data are available on the permeability of the Northern Pacific spoils. However, data from other parts of the mine suggest the permeability of the spoils is similar to the permeability of the Rosebud coal. Thus, the inflow rate from the spoils would be similar to that from the coal. The combined inflow from both would be from 150 to 200 gpm, initially. Within a year inflows would decrease to less than 50 gpm as dewatering of the abandoned pit is completed.

As overburden from the first cut is cast into the abandoned pit, flow from the spoils would be blocked and inflow would only come from the coal and surface runoff. Inflow rates from the Rosebud coal would drop to less than 5 gpm as ground water is removed from a storage in the aquifer.

III-7 Little information is available about the occurrence of ground water in clinker areas next to Area D. The clinker is believed to be largely unsaturated, and as such, little inflow is anticipated from the adjacent Rosebud clinker areas. Minor additional inflows may occasionally occur as saturated zones in the overburden are intersected and dewatered by the mine pit.

Existing hydraulic gradients indicate a potential for downward flow from the Rosebud coal seam toward the McKay coal seam. Mining operations would remove the Rosebud aquifer, creating the potential for upward flow from the McKay coal seam. Over most of the Area D mine area the Rosebud-McKay interburden is sufficiently thick and low in permeability to limit inflow into the mine pit. An exception is the southwestern portions of the application area (between Area E and the old Northern Pacific spoil), where the interburden is less than 10 feet thick and may be sandy. In this area, the potential ~~exists~~ for upward flow would be limited by the small gradients involved and the relatively low vertical hydraulic conductivity of the interburden. Upward flow would not significantly reduce water levels in the underlying McKay coal seam. ~~Vertically downward gradients would reestablish after pit backfilling with the formation of a spoil aquifer at the base of the mine pit.~~ Permeameter tests on interburden cores in other areas of the Rosebud Mine suggest horizontal to vertical permeability ratios as high as 1,000 to 1. Even though the interburden in Area D may be more sandy than in other areas of the Rosebud Mine, the potential for vertical movement through the Rosebud/McKay interburden would be limited.

Significant alluvial aquifers have not been identified in the application area or life-of-mine expansion. However, discharge of the Rosebud coal seam to Pony Creek may support a limited amount of saturated alluvium in the vicinity of spring no. 24 and upstream (fig. II-3). An alluvial monitoring well located on Pony Creek near the eastern boundary of the application area shows approximately one foot of saturated alluvium. Approximately one mile downstream of the alluvial monitoring well, the Pony Creek alluvial deposits are extremely thin (less than one foot in depth) and are unsaturated. This limited area of saturated alluvium would be dewatered as mining activities dewater the Rosebud coal seam. In addition, some recharge areas feeding this spring probably would be covered by boxcut spoil placed outside the mine pit area during life-of-mine operations, causing some flow reductions in spring no. 24.

The application area and life-of-mine expansion contribute such a small amount to the alluvial systems of Cow and Spring creeks that mining-induced changes would be insignificant. ~~At present, the Rosebud coal in the application area discharges approximately 3 gpm to the upper Cow Creek drainage. This water may be temporarily interrupted by mining. Assuming that all Rosebud coal discharge contributes to the alluvial aquifer in Cow Creek, the 3 gpm loss represents only a 1.6 to 2.6 percent reduction in the alluvial ground water flow (120-200 gpm) on Cow Creek in section 36, R2N, R42E. Likewise, very small flow changes are predicted for Spring Creek alluvium.~~ After mining, flow through the Area D spoils toward Cow Creek would be less than 10 gpm. This would represent less than 10 percent of the total flow through the middle to lower reaches of the Cow Creek alluvium. The actual amount of spoil water reaching Cow Creek would be much less than 10 gpm because the hydrologic connection between the Area D spoils and the Cow Creek alluvium is limited since the Rosebud coal seam ends over one mile from the main branch of Cow Creek and is over 100 feet above the creek. Most of the spoil water from Area D would largely be lost to evaporation and plant uptake before reaching the Cow Creek alluvium.

Reclamation of the old Northern Pacific spoils could actually improve alluvial ground water quality of Cow Creek near the mine. The standing water in the unreclaimed highwall pit that recharges the Northern Pacific spoils would be eliminated by reclamation. Regrading and vegetation of the spoils would reduce deep infiltration caused by the hummocky topography that traps surface waters. Overall spoils water discharging to the Cow Creek headwaters would be reduced appreciably. Regrading and reconstruction of tributary drainages to Cow Creek would increase runoff of good quality surface and near-surface waters. The combined discharge quality of surface and ground water from the NP spoils thus, would likely improve after reclamation of the spoils and would ameliorate the effect of TDS increases in Cow Creek resulting from mining of Area D.

Water entering the ~~boxcut~~ pit would be ~~contained in the pit unless it~~ pumped to sedimentations ponds if it becomes an operational problem, ~~at which time it would be pumped to sedimentation ponds.~~ Pond water would mainly be lost to evaporation, seepage, or used ~~to water mine roads~~ for dust suppression and reclamation watering. The remainder would be discharged in accordance with Montana Water Quality Bureau (MPDES) regulations.

The amount of water lost by seepage and discharge would be relatively small. The only time it would be necessary to discharge from a sediment pond would be in response to a major precipitation or snowmelt event when the ponds would be filled with surface runoff. Then discharge would be necessary to comply with regulations concerning retention time and required capacity. Pond seepage could conceivably cause localized waterlogging in the immediate vicinity of ponds.

III-14 Mitigating Measures

A six-percent decrease in ground water discharge to spring no. 24 has been projected as a result of mining in the application area (Western Energy Company, 1984a, p. 42a). Mining in the life-of-mine expansion would further decrease spring flow. Spring No. 24 provides water to a stock pond located downstream of the spring. Given the uncertainty of projecting impacts to springs, the effect of mining could be significantly greater, although mining would probably not completely dry up the spring. Flows to the stock pond could be periodically monitored to quantify changes. If flow decreases significantly during mining, a sub-McKay well could be provided as an alternate source of stock water.

~~To reduce inflow of spoil water from the old Northern Pacific spoil into the boxcut, a buffer of undisturbed coal and overburden could be maintained between the boxcut and the old unreclaimed spoil.~~
III-15 ~~This would reduce the necessity of having to pump large quantities of poor quality spoil water into the runoff and sediment control system where it would probably have to be released to area streams.~~

III-15 Soil Salvage and Redistribution

Western Energy Company proposes to salvage and redistribute enough soil to cover the Area D disturbance area to a depth of approximately 2 feet. The soils would be salvaged and replaced in two lifts, segregating the top 6 to 8 inches from the subsurface layers. Considering the fair to good quality of the soils and overburden in Area D, this depth would be adequate to achieve revegetation success. Of the total 3,465 acres disturbed, 440 acres (369 acres of abandoned spoil and 71 acres of soil storage areas) would not be topsoiled. Since strippable soil material is not present in the abandoned spoil areas, Western Energy is not responsible for soil replacement in these areas prior to revegetation. Although considered "disturbed," the soil storage areas serve only as temporary storage areas for topsoil and, consequently, topsoil needs to be neither stripped nor replaced.

~~Western Energy has recommended stripping depths which in some instances are too deep and in others too shallow. The proposed stripping depths for the Bushy, Spang, and Reidel soils are too deep. These soils have intermittent layers of sandy material, increasing the hazard of both water and especially wind erosion in the reconstructed mine soil. The stripping depths proposed for the Kirby and Birney soils are also too deep. These soils have large amounts of rock fragments in their subsurface layers, usually exceeding 35 percent~~

III-15 ~~below 6 inches. In one map unit, the depth to unsuitably high amounts of rock fragments in the Birney soil is 12 inches. The stripping depth for the Delpoint soil is shallower than the thickness of suitable material. Delpoint has soft bedrock between 20 and 40 inches, with an average depth of 30 inches.~~

As shown in table III-2, Western Energy proposes to salvage and replace approximately 4,302 acre-feet of soil material in the application area and 5,768 acre-feet from the application area and life-of-mine expansion combined. These proposed volumes are very close to the potential soil volumes. The potential volumes, based on stripping some soils to a depth different from what the company proposes, are 4,282 acre-feet for the application area and 6,076 acre-feet for all of Area D.

III-18

Soil Quality

Western Energy proposes to develop a plan for reestablishment of plant rooting zones which are compatible with the intended postmining plant communities. This plan, submitted to the Department of State Lands, would take into account plant rooting depths, topsoil thickness, topsoil texture, and spoil composition and condition.

Mitigating Measures

~~Reducing the salvage depths for the Busby, Spang, and Reidel soils would decrease the total volume of these soils used in soil replacement. Consequently, the potential for wind and water erosion in the reconstructed mine soil would be reduced. Available water capacity in the mine soil would be higher. Increasing the salvage depths for the Delpoint soil would increase the total volume of soil available for salvage and replacement.~~

III-21

Shrubs

Establishment of dominant shrubs in Area D, silver sagebrush (Artemisia cana) and skunkbush sumac (Rhus trilobata), would be initiated by both seeding and planting seedlings. Seedlings would be planted at density of 50 to 100 per acre. Seed would be applied at a rate of 1 pound per acre for silver sagebrush and 2 pounds per acre for skunkbush sumac. Plantings would be supplemented with tree spade transplants. Although the initial planting density for silver sagebrush and skunkbush sumac seedlings would be considerably less than the desired density, seed production by the planted seedlings would likely increase shrub densities to premining levels within one to two decades. Both silver sagebrush and skunkbush sumac would also grow from root sprouts.

III-22 ~~Although Western Energy has no specific plans to reclaim the deciduous shrub vegetation type, this type might become reestablished on moist sites by seed dispersed from scattered shrubs that would be planted by Western Energy after mining. In addition, natural seed dispersal from off-site stands of this type might increase the density of shrubs on small areas of mined land with suitable topographic and moisture conditions. In the absence of specific reclamation measures to provide suitable site conditions for growth of this type, several decades or longer probably would be required for reestablishment.~~

Western Energy would attempt to recreate 2 acres of the deciduous shrub vegetation type. The company would identify eight 1/4-acre sites within the reconstructed drainages that exhibit high moisture potentials. The north to northeast aspects would be steepened, top-soiled, ripped, and mulched. Shrubs and trees, either containerized or bare-root seedlings would be planted at each site. The following species, in unspecified proportions, would be used: American plum (*Prunus americanus*), green ash, buffaloberry (*Sherperdia* sp.), willow (*Salix*), chokecherry, rose, currant (*Ribes* sp.), and snowberry. If necessary, fencing would be used to prevent livestock from browsing these shrubs. After the seedlings become established, grasses would be seeded.

Of the total shrubs and trees planted, some would die before becoming established. The precise number would vary by species and cannot be predicted. Research at the nearby Absaloka Mine shows almost complete survival of plum, chokecherry, and currant after one growing season (Amendola et al., 1984); however, Jensen and Hodder (1979) reported 16 to 55 percent mortality of chokecherry and plum. Bjugstad et al. (1981) reported even higher (60 percent) mortality of plum. For many species, mortality can be reduced by using containerized stock. For a few species (such as green ash), however, bare-root stock would be more appropriate (Jensen and Hodder, 1979; Orr, 1977). Over the long term, shrub and tree densities would be increased by seeds from successful plantings or from offsite sources.

A dry year during seedling planting would severely limit shrub establishment (Bjugstad, 1984). To overcome the effects of drought, the company would irrigate planting areas when necessary (J. Coenenberg, Western Energy Company, pers. comm., July 8, 1985). Other obstacles to success would be competition from weeds (weed seeds may be contained in the straw mulch) and damage by wildlife (Van Epps and McKell, 1984; Penrose and Hansen, 1981; Kay, 1980; Stoeckeler and Slaubaugh, 1965).

III-22 Conifers

Proposed reclamation would replace almost all of the acreage of the ponderosa pine-grassland vegetation type destroyed by mining (table III-3). Although successful reclamation of this type would be expected, numerous environmental, climatic, and management factors could hinder reestablishment of ponderosa pine (*Pinus ponderosa*). To date, no stands of reproducing, mature ponderosa pine approaching premining densities have been established and maintained on mined lands in eastern Montana.

III-24 Mitigating Measures

Other measures that may reduce losses of young seedlings have been presented in the Rosebud Mine's Comprehensive Study (Montana Department of State Lands and U.S. Office of Surface Mining, 1983a). Still more techniques should be devised to reduce predation damage by rodents and other wildlife. Western Energy should continue research on preventing or reducing predation damage on pines.

~~Specific reclamation measures could be devised to reestablish the upland deciduous shrub type:~~

- ~~(1)---Planting on north slopes to take advantage of increased soil moisture.~~
- ~~(2)---Construction of concave drainages to promote snow accumulation and collection of runoff.~~
- ~~(3)---Placement of suitable soils to promote moisture infiltration and storage and to reduce erosion.~~
- ~~(4)---Restriction of grazing to prevent destruction of shrubs.~~

In deciduous shrub- and tree-planting areas Western Energy could improve success by:

- (1) Using the "cleanest" straw mulch available (least amount of weed seeds). Alternative mulches such as native-range hay, gravel, and wood fiber with a chemical tackifier could be considered. These two measures would reduce or eliminate the introduction of competitive weeds.
- (2) Controlling weeds during the first growing season by hoeing or applying a short-term soil sterilant if the proposed mulches are ineffective.
- (3) Planting additional shrubs and trees to compensate for any mortality in the first plantings.

III-26

Upland Game Birds

Sharp-tailed Grouse

Mining would remove habitat now used by sharptails on Area D. Birds would be displaced from Area D on at least those portions being mined. ~~One dancing ground in the life of mine expansion and all of the potential sharptail nesting and brood-rearing habitat would be eliminated.~~ Mining would eliminate one dancing ground and associated habitat within the life-of-mine expansion. A second dancing ground nearby could be disrupted by the noise and dust of mining. Appropriate timing of disturbance would reduce the chances of disrupting breeding. (See Mitigating Measures.)

III-27

Successful reclamation of grassland and shrub-grassland habitats would probably attract grouse. Lush forb growth and cover from grass could encourage use of reclaimed areas for feeding, nesting, and brood-rearing. Western Energy would try to reestablish one or two sharptail dancing grounds on reclaimed grassland. Sharptails, however, may establish dancing grounds naturally. This occurred in Rosebud Mine's Pit 6, where grouse have attended the independently established lek for 3 years. The nearby Absaloka Mine has also reported a naturally established dancing ground on reclaimed grounds (Michelle Mitchell, Westmoreland Coal Co., biologist, pers. comm., 1984).

Train traffic due to production from Area D would average between two and four coal trains per day (loaded and empty) over the life of the mine, assuming that all coal was shipped from the area and not consumed at the generating plants. Unit train traffic, however, would not increase due to coal production from Area D. Coal mined from Area D would replace coal mined from Area E, as production from Area E is phased out. In addition, a portion of Area D coal will be used in Colstrip Generating Units 1 and 2 and will not be transported by unit trains.

REJECTION OF THE
APPLICATION

No changes.

Chapter V

APPENDIXES

No changes.

LITERATURE CITED

Page

VI-1

Amendola, F.A., M.D. Mitchell, and D.W. Simpson. 1984. Reclamation of tree and shrub species at the Absaloka Mine. Symposium on Surface Coal Mine Reclamation on the Great Plains 3:237-250.

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VI-2

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VI-4

Montana Department of State Lands and U.S. Office of Surface Mining. 1982a. Draft environmental impact statement for Western Energy Company's Rosebud Mine, Area C, Block 1. Helena, Montana. 308 pages plus appendixes.

_____. 1982b. Final environmental impact statement for Western Energy Company's Rosebud Mine, area C, Block 1. Helena, Montana.

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_____. 1983b. ~~B5-Cumulative-hydrologic-analysis~~. Technical Support Document. Unpublished report prepared as technical support for the Final comprehensive environmental impact study for Western Energy Company's Rosebud Mine.

- Orr, H.K. 1977. Reestablishment of wooded waterways and associated shrub communities in surface and mining areas of the northwestern Great Plains. Proceedings of 5th Symposium on Surface Mining and Reclamation, NCA/BCR Coal Conference, Exposition No. 4:235-243.
- Penrose, K.D., and D.J. Hansen. 1981. Planting techniques for establishment of container-grown or bareroot plants. Proceedings Symposium on Shrub Establishment on Arid and Semi-Arid Lands 1981:37-46, Laramie, WY.
- VI-5 Stoeckeler, J.H., and P.E. Slabaugh. 1965. Conifer nursery practice in the prairie-plains. USDA Agricultural Handbook 279. 93 pages.
- VI-6 Van Epps, G.A., and C.M. McKell. 1983. Effect of weedy annuals on the survival and growth of transplants under arid conditions. Journal of Range Management 36(3): 366-369.
- Western Energy Company. 1979-1983. Wildlife monitoring reports for Rosebud Mine, Colstrip, Montana.
- _____. 1981. Hydrologic Resource Reports. Rosebud Mine. Colstrip, Montana. vol. 1.
- _____. 1983. 1983 annual hydrology report, Rosebud Mine, Colstrip, Montana: unpublished report, 26 pages.
- _____. 1984a. Application for a surface mining permit, Area D. Billings, Montana.
- _____. 1984b. Area D proposed amendment to air quality permit no. 1483.

CONSULTATION
AND
COORDINATION

No changes.

COMMENTS ON THE

DRAFT EIS

The Department of State Lands (DSL) received sixteen letters commenting on the EIS. Starting on the next page, this chapter reproduces each letter in full. None have been omitted. Beside each letter are DSL and DOI's responses.

Letter 1---Montana Power Company.....
Letter 2---U.S. Department of Interior, National Park Service.....
Letter 3---U.S. Department of Agriculture, Soil Conservation Service..
Letter 4---U.S. Department of the Interior, Geological Survey.....
Letter 5---Patty Kluver.....
Letter 6---U.S. Environmental Protection Agency.....
Letter 7---Western Energy Company.....
Letter 8---Montana Department of Highways.....
Letter 9---U.S. Department of the Interior, Bureau of Indian Affairs..
Letter 10--Tom Wimer.....
Letter 11--Montana Department of Natural Resources & Conservation.....
Letter 12--U.S. Department of the Air Force.....
Letter 13--U.S. Department of Energy.....
Letter 14--Patty Kluver.....
Letter 15--Northern Plains Resource Council.....
Letter 16--Jack Atcheson & Sons, Inc.....

January 18, 1985

Mr. Kit Walther
Environmental Analysis Bureau
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. Walther:

In reviewing the Draft Environmental Impact Statement for the Western Energy Company's Rosebud Mine Area D, I found one statement which should be corrected. On page II-42 under the heading Solid Waste, a statement is made that the MPC Environmental Department monitors four groundwater wells around the Rosebud County landfill site.

The MPC Colstrip Project Division's Environmental Engineering Department does not monitor these four wells for either water level or contamination. I have done some maintenance on these wells to repair damage done by construction activities but this activity was done under the request of the Rosebud County Sanitarian. The Sanitarian, as I understand it, is responsible for the quarterly monitoring of the wells.

Sincerely,

[Handwritten signature]

Gordon C. Hills
Hydrologist

GCH:sd

Please see revision in text.

RECEIVED
JAN 22 1985
STATE LANDS



United States Department of the Interior

NATIONAL PARK SERVICE
ROCKY MOUNTAIN REGIONAL OFFICE

655 Pacific Street
P.O. Box 25387
Denver, Colorado 80225

IN REPLY REFER TO

L7619 (RMR-PC)
DES 85/2

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FEB 05 1985
STATE LANDS


FEB 1 1985

Mr. Kit Walther
Environmental Analysis Bureau
Montana Department of State Lands
Capitol Station
Helena, Montana 59620

Dear Mr. Walther:

We have reviewed the draft environmental impact statement for Area D of Western Energy Company's Rosebud Mine in Rosebud County, Montana, and have determined that the proposed plan would not have impacts or potential impacts on any present, proposed or potential unit of the National Park System or any other areas or features where the National Park Service has program responsibilities.

Sincerely,


Richard A. Strait
Associate Regional Director
Planning and Resource Preservation

Thank you for your comment.

LETTER 2

LETTER 3

United States
Department of
Agriculture

Soil
Conservation
Service

Federal Building, Room 443
10 East Dabcock Street
Bozeman, MT 59715

February 19, 1985

Mr. Kit Walther
Department of State Lands
Capitol Station
Helena, MT 59620

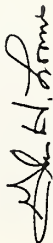
RE: Draft EIS Western Energy Company
Rosebud Mine Area D

Dear Mr. Walther:

We acknowledge receipt of the draft EIS for the above project that was addressed to us for review and comment.

We have reviewed the draft environmental statement and find that there are no controversial items in the statement within the realm of the Soil Conservation Service's expertise and responsibilities. We find no conflict with any SCS ongoing or planned programs or projects.

Sincerely,



Glen H. Loomis
State Conservationist

cc: R. Latcheler, State Biologist, SCS, Bozeman, MT

Thank you for your comment.

RECEIVED

FEB 22 1985

STATE LANDS



United States Department of the Interior

GEOLOGICAL SURVEY
Water Resources Division
Federal Building, Room 428
301 South Park Avenue, Drawer 10076
Helena, Montana 59626-0076

February 21, 1985

Mt. Kit Walther
Montana Dept. of State Lands
1625 11th Avenue
Helena, Montana 59620

Dear Kit:

We have reviewed the draft Environmental Impact Statement on Western Energy Company Rosebud Mine, Area D and offer the following comments:

- A 1. Page II-8, paragraph 2 - "The importance of clinker areas as recharge zones is not well understood" is somewhat misleading. Although researchers have been frustrated in attempts to quantify the amount of recharge attributable to clinker outcrops, all would agree that they are the most favorable areas for recharge to occur. Lack of vegetation, extremely high fracture permeability, and low porosity combine to make these zones very transmissive to precipitation and snowmelt.
- B 2. Figure II-4 - If the potentiometric contours shown on figure II-4 are for the Rosebud coal as implied in the title, the lines should terminate at the approximate Rosebud cropline.
- C 3. Page III-6, paragraph 3 - Inflow of 35-80 gallons per minute would probably not be lost to evaporation even in summer months unless spread over a large area.
- D 4. Page III-6, paragraph 4 - Several hundred gallons per minute of inflow from the old spoils would make the above problem even worse.
- E 5. Page III-7, paragraph 5 - If all the inflow water not lost to evaporation is pumped to sedimentation ponds, consideration should be given to potential impacts of seepage losses. This has been a major concern to local residents in the past. Seepage can result in ground-water quality problems and water logging.

Thank you for the opportunity to review the draft report. We feel that the analysis has been comprehensive and technically sound. If you have questions concerning any of our comments, please call.

Sincerely,

Joe A. Moreland
Acting District Chief

LETTER 4

- A We would agree; however, note that the clinker areas mentioned are all located downgradient of the proposed Area D disturbance area and only a small portion would be removed by mining. The small amount removed or affected by mining would not be sufficient to significantly affect recharge in the Cow Creek drainage.
- B You are correct; the figure has been corrected.
- C The inflow of 35-80 gpm will probably be distributed along the entire mine pit and should not present a problem. If it presents an operational problem it will be collected in pumps and pumped to sedimentation ponds prior to discharge (see revised text).
- D You are correct; however, a realistic estimate of the inflow from spoils would be an inflow similar to that from undisturbed coal and overburden. The majority of this water would be removed during dewatering of the old mine pit prior to beginning mining and should not present any unusual operational difficulties (see revised text).
- E The quantity and quality of water expected to be pumped from the mine pit will be insufficient to cause water quality or water logging problems on East Fork Armells Creek. Most of the water encountered in the mine pits will be pumped to sediment ponds and used for dust suppression and reclamation watering. The only time discharge from sediment ponds to Armells Creek could occur would be as a result of a major precipitation or snowmelt event which filled the pond to capacity (see revised text).

PATTY KLUVER

Route 1, Box 2046
Forsyth, Montana 59327

March 1, 1985

Mr. Kit Walther, Chief
Environmental Analysis Bureau
Reclamation Division
Mt. Dept. of State Lands
Capital Station
Helena, Mt. 59601

Re: Area D DEIS

Dear Mr. Walther:

A In a previous mailing, I sent your office copies of the most recent data, taken by the U.S.B. Reclamation Research Unit, pertaining to Hydrology involving Area D. The documents were sent direct to the Commissioner, but he assured me he had passed them on to you. He also informed me the data was too late to appear in the DEIS, but would certainly be a part of the final EIS of Area D.

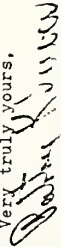
B You may be aware that a Stipulation was contracted between the Board and Dept. of Nat. Resources and others, and the Mont. Power Company, which designates a complete study of the Cow Creek drainage, and a surface and well water study of Pony Creek. The study is ongoing, one which would certainly be in jeopardy if the Area D permit to coal stripmine at this time, until after the 2 year study is completed.

C Of even more concern is the revelation that much of the hydrology work submitted by the applicant Company, Western Energy, and by the consulting firm of Hydrometrics, is not up to the S.P.A. Quality Control and Quality Assurance standards. This information can be confirmed by contacting Kris Olsen at the Battelle Northwestern headquarters, phone No. 509-378-4114.

This letter is written in behalf of Genie Land Co. owner of the property which is adjacent to Western Energy Co.'s proposed Area D coal stripmine.

Thank you for your consideration.

Very truly yours,



Patty Kluver, Sec. Treas.
Genie Land Co.

LETTER 5

- A The data you sent has been evaluated by the agencies for the preparation of the EIS. The data demonstrates that water quality of Cow Creek and Pony Creek alluvium and surface waters are comparable to other drainages of the area.
- B Mining of Area D would not adversely effect the water quality monitoring program under way in Cow Creek and Pony Creek because it would take decades for detectable ground and surface water quality changes to occur.
- C We spoke with Kris Olsen of Battelle Northwestern. He did not confirm that Western Energy Company's data is not up to the EPA quality-control standards. Rather he indicated that there appeared to be a trend toward higher values reported in Western Energy's data when compared with data collected by the state. Such differences do not mean the data is in error or does not meet quality assurance data.



LETTER 6

REF: 840

March 4, 1985

Mr. Kit Walther
Environmental Analysis Bureau
Montana Department of State Lands
Capitol Station
Helena, Montana 59620

Dear Mr. Walther:

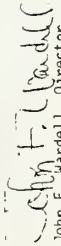
Under authority of Section 309 of the Clean Air Act we have reviewed your agency's draft environmental impact statement (EIS) for Area D of Western Energy Company's Rosebud Mine. Although the mine expansion will have an impact on groundwater, wildlife, and other aspects of the environment, the Agency does not believe there will be a violation of EPA environmental standards base on the information provided in the draft EIS.

Comment noted.

According to EPA's rating system for draft impact statements this EIS is rated LO-1 (lack of objections - sufficient information). This rating means that our review has not identified any potential environmental impacts that would require substantial changes to the selected alternative.

If you have any questions, please contact Mr. Gene Taylor of this office at 449-5486.

Sincerely yours,


John F. Wardell, Director
Montana Office



WESTERN ENERGY COMPANY

U.S. 8604204.41 / P.O. BOX 8500 / BILLINGS, MT. 59101 / (406) 252-2777

March 4, 1985

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MAR 05 1985
STATE LANDS

Mr. Kit Walther, Chief
Environmental Analysis Bureau
Department of State Lands
Capitol Station
Helena, MT 59620

Re: Area D Draft Environmental Impact Statement

Dear Kit:

Thank you for allowing us to comment on the Area D Draft Environmental Impact Statement. Following are Western Energy's comments on the document according to the various disciplines:

A Soils/III-15 Soil Salvage and Distribution

Western Energy Company's comments concerning impacts to the soil resource pertain to soil salvage and redistribution. We concur that the proposed salvage depths should be subject to revision. At this time, salvage suitability criteria are being reevaluated for all active Rosebud Mine area soils with the intent of revising soil salvage depths.

Area D is unique in that a large portion of the application area consists of the ponderosa pine vegetation type. One major revision will involve the intentional salvage and redistribution of ponderosa pine soils, those which contain rock fragments, to enhance the establishment of post mine ponderosa pine communities. This will probably involve a single lift and redistribution of two feet when those materials are needed and encountered during direct haul operations. Otherwise, salvage depths for those soils will be restricted according to current suitability criteria. The increased salvage of the shallow, rocky soils will insure that an adequate amount of soil is available for the overall reclamation of the application area, particularly for the required acreages of ponderosa pine.

A decrease in salvage depths for the sandy, alluvial and residual soils mentioned in the report, will be based on an evaluation of subsoil suitability. In addition to salinity and texture, structure and CaCO₃ content are being included as important subsoil salvage suitability criteria.

After adjustments have been made to the salvage depths, and volumes, it is expected that approximately two feet of soil cover for the disturbance area will be maintained.

A The Department is currently reviewing Western Energy's proposal to adjust salvage depths and suitability criteria. Regardless of whether the existing or proposed criteria are used, more than enough good-quality soil is expected to be salvaged. Please note page III-15.

Letter to Kit Walther
March 4, 1985
Page Two

B Page II-29 Wildlife

Sharp-tailed grouse dancing ground No. 11 is located in the northeast quarter of section 30, not the northwest quarter.

C Page II-30 Wildlife
Raptors

The prairie falcon nested in Eagle Rock in 1979. Great horned owls used Eagle Rock for nesting in 1980, 1981, 1983, and 1984.

D Sharp-tailed Grouse

Revisions to the mine plan have resulted in no disturbance to dancing ground Number 11. Also, dancing ground Number 11 would not have all its nesting, brood rearing habitat eliminated as stated. Sharp-tailed grouse have nested an average of 1-20 miles from the dancing ground in which they mated on Western Energy's study area. (WECO. Annual Wildlife Report 1983). Hans Landel working with sharp-tailed grouse on WECO's study area found "The average distance from OG #23 that seven radio tagged females nested was 1.20 miles (range: 0.59-2.73 miles)".

If this 1.20 mile average is used to calculate the brood rearing and nesting habitat associated with grounds No. 15 and 11, ground No. 15 would have less than 20 percent of the habitat disturbed and ground No. 11 would have less than 10 percent disturbed. These percentages are gross estimates made to point out the fact that the majority of sharp-tailed grouse habitat associated with these dancing grounds will not be affected by mining.

E Vegetation

Chapter III, Pages 21 and 24

Western Energy has submitted a plan for reclamation of the Upland Deciduous Shrub-Tree vegetation type. The plan includes many of the measures proposed in the EIS on page III-24. This plan has been approved by the Department of State Lands and will be incorporated in the permit application.

Hydrology

F P.II-5 Valley Fill Materials (1st Paragraph)

Water level measurements do not suggest brief saturation of valley fill during spring snowmelt or following heavy runoff. Wells WA-138, WA-173, WA-174, WA-175, WA-176, and WA-207 have been dry year round since installation. Well WA-206 has been dry since the third monthly reading. Well WA-178 had 0.08 feet of water in May of 1983 and 0.22 feet of water in May of 1984, but has been dry otherwise.

B Thank you for the correction. See revised text.

C With the exception of 1983 nesting, the text has been revised. Nesting by great-horned owls in 1983 was not documented (Bruce Waage, Western Energy Company, pers. com., May 3, 1985).

D The Department of State Lands has not received a revised mine plan for the life-of-mine expansion. The analysis, therefore, will remain unchanged. (The Department recognizes that Western Energy Company may change its disturbance area boundary in its permit application for Area D East.) The text has been revised to indicate that habitat elimination would occur only in the mined area.

E The plan is now discussed in the final EIS. Please see revised page III-22.

F This information is noted (see revised text).

Letter to Kit Walther
March 4, 1935
Page Three

G P.II-10 Ground Water Quality (Last Paragraph)

Alluvial waters in headwater drainages often show concentrations in the range of 4500 mg/l as shown by the following table.

WEST FORK ARNELLS CREEK		STOCKER CREEK TRIBUTARY	
WELL	TDS	WELL	TDS
WA-183	4729	WA-169	4769
WA-184	4009	PW-107	6434
WA-185	4525		

H P.II-11 Surface Water (4th Paragraph)

Water quality data have been available for sites SW-70, SW-80, and SW-81 since 1982 and can be found in HRDV I, Surface Water Quality.

I P.III-7 Groundwater - Changes During Mining

Permeameter tests on interburden cores from throughout the Rosebud Mine suggest horizontal to vertical permeability ratios for the Rosebud-McKay interburden of approximately one thousand. When pumping Rosebud wells, water levels have not been observed to decline in adjacent McKay wells nor have draw-downs been observed in Rosebud wells when pumping adjacent McKay wells. These data suggest limited, if any, vertical flow through the Rosebud-McKay interburden.

J P.III-7 Groundwater - Changes During Mining (7th Paragraph)

Mining in Area D could affect only partial dewatering of the limited Pony Creek alluvial deposits because as the recharge area to the north is being mined the recharge area to the south will have been reclaimed and may be discharging toward Pony Creek again. In addition, it is likely that much of the recharge to the alluvium comes from direct infiltration rather than lateral in-flows. Since the alluvium will not be disturbed, this recharge source will not be affected.

K P.III-8 Groundwater - Changes During Mining (12th Paragraph)

Water quality in spring 24 (Rosebud Coat) is actually measured in the pond immediately below the spring. Because this pond also receives a significant contribution from surface water runoff, the water quality has fluctuated considerably; TDS levels being quite low in the spring and much higher later in the year after evapotranspiration and evaporation have concentrated the water. Because surface water in-flows to the pond will not be significantly affected, the quality of water available for livestock and wildlife use after mining will probably be similar to premine conditions.

G You are correct (see revised text).

H Comment noted (see revised text).

I Comment noted (see revised text).

J The Department feels that there probably will be some impacts on the Pony Creek alluvial deposits due to mining. Therefore, this paragraph will remain intact.

K With reduced baseflow from the coal aquifer, the quantity and quality of water in the pond would likely be reduced by late summer or fall. Our conclusion in the draft, therefore, is unchanged.

Letter to Kit Walther
March 4, 1985
Page Four

LETTER 7

L P.III-13 Cumulative Hydrologic Impacts

The discussion under Cumulative Hydrologic Impacts apparently assumes a connection between Area D and Cow Creek alluvium. Because there is no actual direct connection between the Rosebud Coal or overburden in Area D and Cow Creek alluvium, and there will be no direct connection between spoils and Cow Creek alluvium after mining, the estimated impacts are probably very conservative.

L Comment noted.

If you have any questions, or require further input or clarification, please feel free to contact me.

Sincerely,



G. William Harbrecht
Permit Coordinator
Montana/Wyoming Operations

GHH/skt

BH2/1.1-1.4



TELETYPE UNIT GOVERNOR

STATE OF MONTANA

STATE LANDS PROJECT

HELENA MONTANA 59620

March 5, 1985

RE: Draft Environmental
Impact statement for
Area D of Western
Energy Co's Rosebud Mine

Mr. Kit Walther
Chief Environmental Analysis Bureau
Montana Department of State Lands
1339 Eleventh Avenue
Helena, MT 59620

Dear Kit:

Thank you for the opportunity to review the above referenced EIS.

Although the coal proposed to be mined will be hauled by unit trains, any increase in the number of unit trains moving east or west out of the state will have a noticeable impact on existing "At - Grade" railroad crossings.

These impacts will be in the form of delays to the traveling public, emergency vehicles, and in some cases school children walking to school.

The Department feels that these impacts should be identified and incorporated into the final environmental impact statement.

Sincerely,

L. S. "Buck" Harris, Chief
Planning & Statistics Bureau

LSH:DC:jb:sk:2uu

cc: Robert E. Champion
Bill Strizich
Don Harriott
Don Gruel
Don Fallang

Coal production from Area D is not expected to significantly increase unit train traffic above current levels. As noted on page III-30 of the Area D DEIS, coal mined from Area D will replace coal produced from Area E, as Area F production is phased out. Furthermore, as noted on page I-6, part of the coal mined in Area D will be used in Colstrip Generating Units 1 and 2 and will not be transported by unit trains (see revised III-37).



United States Department of the Interior
BUREAU OF INDIAN AFFAIRS

BILLINGS AREA OFFICE
316 NORTH 26TH ST
BILLINGS MONTANA 59101

IN REPLY REFER TO

Land & Minerals
Code 360

MAR 6 1985

RECEIVED

MAR 07 1985

STATE LANDS

Mr. Kit Walther
Department of State Lands
Capitol Station
Helena, Montana 59620

Dear Mr. Walther:

Our Northern Cheyenne Agency has reviewed the draft environmental statement for the Rosebud Coal Mine, Area D and has reported that little or no impact will occur to the lands or people of the Northern Cheyenne Agency if the proposal is approved. It appears that the proposed action will continue at the current level of mining operations as Area C is phased out and expansion extends into Area D.

We appreciate the opportunity to have reviewed the draft environmental impact statement.

Sincerely,


Leonard W. Turner
Area Director

Comment noted.

LETTER 10

RECEIVED

MAR 12 1985

STATE LANDS

Dear Sir:
I am sorry for the chance to comment on a brief environmental statement for one of the Western Energy's Peabody mine.

Two times a one half mile north of Colstrip, my land joins the mine area.

I am concerned about the ground water due to the mining. When they start several wells & drainage ruined by the large blocks of water to be in the overburden & coal.

Some other have went dry or almost dry because of the aquifer being cut off.

Some where there was some way they could keep from doing that or let that compensate us for the damage being done.

The mining & the power plants are quite an impact on us without running our land and stock water. Please keep,

4240 Hwy 14, Mont. 59327

Tom Miner

The agencies are aware of your concern; however, we know of no documented cases of water supplies adversely affected by mining at Colstrip. To date, the agencies have no records of specific complaints. Under Rule 26.4.648 of Montana's Permanent Program Strip and Underground Mine Reclamation Rules and Regulations pursuant to the Strip and Underground Mine Reclamation Act, Western Energy is required to replace any water supplies that have been contaminated, diminished, or interrupted by mining. If you have any water supplies which you believe have been adversely affected by mining, please contact both Western Energy and the Department.

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION

LETTER 11



TED SCHWENKER, GOVERNOR

32 SOUTH EWING

STATE OF MONTANA

HELENA, MONTANA 59620

(406) 441-6059

March 8, 1985

Kit Walther, Chief
Environmental Analysis Bureau
Reclamation Division
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Dear Mr. Walther:

The Montana Department of Natural Resources and Conservation is reviewing the Draft Environmental Impact Statement (EIS) on Western Energy Company's Rosebud Mine Area Dr. Our Water Resources Division is particularly interested in the assessment of existing hydrology and anticipated impacts.

It appears that the Montana Department of State Lands and the U.S. Office of Surface Mining have done a commendable analysis. Our only comments are to suggest

- A (1) the inclusion of additional references, citations, and explanations of assumptions and methodologies (the latter, perhaps, in a technical appendix), and
- B (2) the quantification of expected impacts, wherever possible.
- C Thorough documentation of the work and quantitative as well as qualitative conclusions would help readers and reviewers and further enhance the quality and usefulness of this (and future) EISs.

Thank you for the opportunity to comment.

Sincerely,
Larry Easbender
LARRY EASBENDER
DIRECTOR

- A The draft EIS contains six pages of literature cited. All references are appropriately cited in the text. The Comprehensive Environmental Impact Study (1983a) and Technical Support Document (1983b) both describe assumptions and methodologies.
- B Impacts have been quantified to the extent that the data and impact assessment methodologies allow.
- C Comment noted thank you.

LF/CW/nj

4-11-85 11:00 AM LFW:GJA

adams & co



DEPARTMENT OF THE AIR FORCE
AIR FORCE REGIONAL CIVIL ENGINEER CENTRAL REGION
1114 COMMERCE STREET
DALLAS, TEXAS 75242

LETTER 12

11 MAR 1985

Mr. Dennis Hermer, Commissioner
Montana Department of State Lands
Capitol Station
Helena, Montana 59620

RECEIVED

MAR 15 1985

STATE LANDS

Dear Mr. Hermer:

Thank you for allowing us the opportunity to review the Draft Environmental Impact Statement Western Energy Company Rosebud Mine Area D, Montana.

We wish to express our support of your agency in developing functional management plans for lands under its control. The Air Force concern for these management issues contains the need to retain use of existing and the establishment of future military flight training areas and routes which may traverse these areas.

Comment noted, thank you.

Currently no Air Force air operations cross any portion of the study area. Although flight training areas, routes, and airspace requirements of the military are subject to change and do change frequently, it is not anticipated that new routes will be established in the immediate future.

We are hopeful this information is useful in your planning. If additional information is needed, our staff point of contact is Mr. Raymond Bruntmyer, (214) 767-2514, or FTS 729-2514.

Sincerely,

Raymond Bruntmyer

DON-MICHAEL BRADFORD, Captain, USAF
Director, Environmental Planning Division

Cy to: HQ USAF/LEEV



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

LETTER 13

5010-108-01-02

March 13, 1985

RECEIVED

MAR 16 1985

STATE LANDS

Mr. Dennis Hemmer, Commissioner
Department of State Lands
State of Montana
Capitol Station
Helena Montana 59620

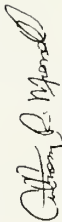
Dear Mr. Hemmer:

We have reviewed the draft environmental impact statement (EIS) on Western Energy Company's Rosebud Mine Area D. This project is not within the Bonneville Power Administration (BPA) service area and has no impact on BPA facilities. However, our Office of Power and Resources Management offers the following suggestions:

- A 1. The effects of turbidity and heavy metal content on fish populations, spawning, and rearing in the streams should be addressed in the EIS.
- B 2. The discussion of cumulative hydrologic impacts in Chapter 11 describes changes to water quality in terms of total dissolved solids (TDS) and sediment levels, and then assigns a level of significance. The discussion should address the project's effects on downstream water uses and compliance with Montana water quality standards for each stream impacted. In predicting pollutant loading, the analysis should address changes in pH levels and concentrations of toxicants such as heavy metals.

I hope these suggestions will be useful to you in preparing the final EIS. If you need further information, please contact me.

Sincerely,



Anthony R. Norrell
Environmental Manager
Bonneville Power Administration

A The drainages with their small flows probably have no viable fish populations (Klairsch, 1983 on-file report to DSL). Secondly, the quality of surface waters in the downstream drainages are not expected to change significantly (see Hydrology, Chapter 11). So, if fish do inhabit those downstream drainages they would not be affected.

B The Department feels the discussion of cumulative impacts on water quality is adequate. No downstream impacts from lowered water quality due to mining have been observed. All studies of spoil water quality to date at the Rosebud Mine have not seen changes in spoil water to an acid pH. The solubility of heavy metals is very limited under alkaline pH conditions and no toxic levels of heavy metals in mine spoil waters have been observed.

PATTY KLUVER

Route 1, Box 2046
Forsyth, Montana 59327
March 16, 1985

Mr. Kit Walther, Chief
Environmental Analysis Bureau
Reclamation Division
Mont. Dept. of State Lands
Capital Station
Helena, Mt. 59601

RECEIVED

MAR 19 1985
STATE LANDS

Dear Mr. Walther:

Thank you for the opportunity to make additional comment on the Draft EIS for Area D, at the Rosebud mine, Colstrip.

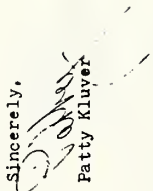
A The word, "insignificant" was used with abandon, in the Draft EIS, pertaining to Hydrology. While an increased salt load in the surface and ground water of drainages from Area D may appear "insignificant" to the mining company, or to the analysis bureau in Helena, it is not applicable when viewed by the downstream landowner, Genie Land Co. I am sure you are aware that water flows down hill!

B The destruction, as a result of mining and affiliated endeavors, has already been observed on Cow Creek. It is being documented, while the charge that "poor range management" and poor farming techniques, parroted by certain of the DSL staff from W&Co., has yet to be proven in any way shape or form. Therefore, in your assessment, please set aside the word "insignificant," to do an over-all view, from three (3) angles, that of W&Co., DSL, and Genie Land Co.

C In addition, the ash pond for Plants 3 and 4 is no more than 2 miles from the proposed mine site. The activities, blasting of deep overburden, etc., could very well cause more leakage from the toxic waste dump than has already appeared. After all, the slurry wall is a plastic-concrete structure installed, for the most part, on the same geological horizon as that of the Rosebud coal, or in the hard sandrock that separates the Rosebud coal and the McKay vein. The site was foolish in selection, and made far more dangerous by the possibility that mining might take place so close to it.

In reporting more leakage, I refer to the spring on so-called Cow Creek, which registered a 2. mg/l of Boron, in the samples I sent you in December. Since the vegetation does not show the presence of that high count, it is safe to assume the pond is leaking already.

Sincerely,


Patty Kluver

A

The projected increases in TDS concentrations in Cow, Spring, and Pony creeks would not be significant because they fall within the normal range of TDS values in alluvial and surface waters of the three drainages. In addition, the changes would fall within the limits of error from normal sampling and analytical procedures.

B

There is no evidence to date showing leakage of the Unit 3 and 4 flyash pond. The wall is installed in the Tongue River Formation, but is finished in strata below the Rosebud coal to prevent leakage of the leachate into the coal seam. The minimum distance between the flyash pond and any potential blasting in Area D is over two miles and no damage is expected to occur to the slurry wall or any structure associated with the flyash pond. Recent testing by DNR confirmed the impervious nature of the slurry wall.

C

Regarding the sample from the South Fork Cow Creek spring showing 2 mg/l boron, please refer to the Department's letter to you of March 16, 1984. This letter discussed the occurrence of boron in southeastern Montana and shows that boron levels of 2 mg/l in surface waters are not uncommon. McKee and Wolf (1963) state that alfalfa can tolerate boron concentrations in irrigation waters of 2-4 mg/l. Vegetation growing in systems with boron levels of up to 2 mg/l develop tolerance over time. The fact that vegetation in South Fork Cow Creek does not show boron toxicity symptoms indicates the plants are tolerant of the boron concentrations in the surface and ground water systems there (McKee, et al., 1963).

NORTHERN PLAINS RESOURCE COUNCIL

LETTER 15

Field Office
Box 85R
Helena, MT 59624
(406) 443-1965

Main Office
419 Supleton Building
Billings, MT 59101
(406) 248-1154

Field Office
Box 886
Glendive, MT 59330
(406) 365-2825

March 18, 1985

Mr. Kit Walther, Chief
Environmental Analysis Bureau
Montana Department of State Lands
Capitol Station
Helena, MT 59620

Re: Comments, Draft EIS, Rosebud Mine, Area D

Dear Mr. Walther,

Thank you for the opportunity to comment on the Draft EIS for Western Energy Company's Rosebud Mine, Area D.

Northern Plains Resource Council is concerned with the potential for discharge of Area D spoil water into Cow and Pony Creek drainages where a fly-ash pond seepage monitoring system is currently in place. In an earlier water discharge permit application before the Water Quality Bureau, #MT-DD027871, since withdrawn, Western Energy Company (WECO) had suggested discharging wastewater from Area D mining operations into Pony, Cow Spring, and East Fork Armell's Creek drainages. Recently, WECO substituted a revised permit application, #MT-DD018029, to discharge all wastewater from Area D sedimentation ponds into East Fork Armell's Creek.

As the hydrological seepage potential for portions of Area D is relatively high, has the Department considered the potential adverse impacts such discharges could have on the East Fork Armell's Creek drainage? Also, is it realistic to assume that all spoil water, even from eastern portions of Area D will flow towards East Fork Armell's Creek drainages when the coal beds, and hence, the pit bottoms slope toward the south and Cow Creek? Or, will it be necessary and feasible to pump large quantities of water westward from eastern sections of Area D? (Chapter III-6/Hydrology)

The EIS states that "To reduce inflow of spoil water from the old Northern Pacific spoil into the boxcut, a buffer of undisturbed coal and overburden could be maintained between the boxcut and the old reclaimed spoil." (Chapter III-14/Hydrology) Does the Department intend to make this

During mining of Area D, impacts to the surface water system will include interruption of surface water flows from ephemeral watersheds within the permit area, increased sediment loads in overland flow and ephemeral streams in the proposed mine area, and infiltration of water impounded behind sediment control structures. The interruption of surface water flows is only temporary and such a diminution will have negligible effects downstream as the area to be disturbed by mining is small relative to the total areas of the drainages. For example, the East Fork Armell's Creek drainage extends over 62,080 acres, 882 acres or only 1.4% of which will be within the proposed mine area. This small area contributes less than one percent of the total flow to East Fork Armell's Creek.

All runoff from disturbed areas will be treated in sediment ponds designed to contain the 10-year, 24-hour precipitation event. No discharge from ponds will occur until testing shows that the water will meet applicable effluent standards. The opportunities for discharges to occur will be rare, as most impounded water is used during the mining operations for watering haul-roads for dust control. Any discharge which does occur, will be discharged only to East Fork Armell's Creek.

Infiltration of water from sediment ponds may contribute some recharge to the Rosebud/McKay interburden. In a conservative scenario, if every drop of rainfall over Area D infiltrated to the ground water system, the resulting flow to East Fork Armell's Creek would still be less than one percent of the total flow. At no place will the final spoil aquifer be in direct connection to Cow Creek.

LETTER 15

Page 2 Area D comments

a recommendation or stipulation in the Final EIS and subsequent permit?

Again, thank you for the opportunity to comment.

Respectfully submitted,



Chuck Christiansen
NPRC Staff
419 Stapleton Building
Billings, MT 59101
(406) 248-1154

The resulting flow changes to East Fork Armell's Creek from both surface water and ground water changes due to mining will be minimal. When mining-related impacts are combined with and masked by changes due to community and industrial activities in Colstrip, they become negligible.

No, the Department does not consider a buffer of coal to be necessary. The coal and spoil will be simultaneously dewatered as the XP Pit is pumped out prior to commencing mining operations. Once the pit is dry, any additional inflow during mining will be captured with sumps or ditches and pumped to sediment ponds.

B

Jack Atcheson & Sons, Inc.

INTERNATIONAL HUNTING CONSULTANTS
INTERNATIONAL TRAVEL AGENCY
TAXIDERMISTS



3210 Ottawa Street - Butte, Montana 59701

(406) 782-3445

Telephone (406) 782-3498 (406) 782-3470

Telex/airmail Telephone (406) 782-0569

March 19, 1985

RECEIVED

MAR 20 1985

STATE LANDS

Kit Walther, Bureau Chief
Dept. of State Lands
1625 - 11th Ave.
Helena, Mt. 59620

Dear Mr. Walther:

In response to your request for comments on the Rosebud Mine.

I am not opposed to mining as such, but it must be apparent to the State Land Dept. that public land and state land are one and the same. According to the Constitution of the State, the State Land Dept. is required to protect and manage wildlife. We hope that the Montana Dept. of Fish, Wildlife & Parks has filed a statement concerning this mine.

Sincerely yours,

Jack Atcheson, President

JA/mw
CC-Mont. Dept. of Fish,
Wildlife & Parks

The Montana Department of Fish, Wildlife and Parks (DFWP) is responsible for the management of fish and wildlife resources. The DFWP may comment on the draft environmental impact statement as can other state and federal resource agencies. The Department of State Lands (DSL) received no comments from the DFWP during the public comment period.

Selective Hunting is Conservation

Selective hunting helps save wildlife. In a time of habitat loss and overhunting, selective hunting is the only way to conserve wildlife. Without the hunting license money paid by sportsmen, there would be few game birds or mammals left in the world today. To the best of our knowledge, there is no other way to conserve wildlife in North America.



